

Listing of Claims

Please amend the claims as follows. This claim set is to replace all prior versions.

1. (Currently amended) A method of modifying at least one of bandwidth and ~~and/or~~ Quality of Service (QoS) for a user session in a network that comprises a Regional/Access Network (RAN) that facilitates differentiated end-to-end data transport between at least one of a Network Service Provider (NSP) and ~~and/or~~ an Application Service Provider (ASP) and a Customer Premises Network (CPN) that includes Customer Premises Equipment (CPE), comprising:
 - receiving a request at at least one of the NSP and ~~and/or~~ the ASP to change at least one of bandwidth and ~~and/or~~ QoS associated with the user's session; and
 - using Application Programming Interface (API) calls at at least one of the NSP and ~~and/or~~ the ASP to communicate with the RAN to modify the at least one of bandwidth and ~~and/or~~ QoS associated with the user's session.
2. (Currently amended) The method of Claim 1, wherein receiving the request comprises:
 - initiating the request at at least one of the NSP and ~~and/or~~ the ASP to change at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session.
3. (Currently amended) The method of Claim 1, wherein receiving the request comprises:
 - receiving the request at at least one of the NSP and ~~and/or~~ the ASP from a user to change at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session.
4. (Original) The method of Claim 3, wherein the QoS associated with the user's session is scheduling resources.
5. (Currently amended) The method of Claim 4, wherein using the API comprises:
 - sending a query from at least one of the NSP and ~~and/or~~ the ASP to the RAN to obtain at least one of a bandwidth range and ~~and/or~~ QoS capabilities from the RAN.

6. (Currently amended) The method of Claim 5, further comprising:
presenting to the user via at least one of the ASP and ~~and/or~~ the NSP at least one bandwidth/QoS option within at least one of the bandwidth range and ~~and/or~~ QoS capabilities received from the RAN.
7. (Original) The method of Claim 6, further comprising:
obtaining a user selection of one of the at least one bandwidth/QoS option at the NSP and/or the ASP; and
updating the RAN with information to provide the selected bandwidth/QoS option for the user's session.
8. (Original) The method of Claim 7, further comprising:
updating the CPE with the information to provide the selected bandwidth/QoS option for the user's session.
9. (Currently amended) The method of Claim 8, wherein updating the CPE with information comprises:
sending at least one of an update session bandwidth info message and ~~and/or~~ a QoS-related message from the RAN to the CPE that contains a request for changing the bandwidth/QoS associated with the user's session to the selected bandwidth option in the CPE.
10. (Currently amended) The method of Claim 9, wherein updating the RAN with information further comprises:
updating at least one of a rate limit and ~~and/or~~ QoS associated with a communication queue in the RAN that is used to process traffic associated with the user's session.
11. (Currently amended) The method of Claim 7, wherein updating the RAN with information comprises:

sending a change session bandwidth request message from at least one of the NSP and ~~and/or~~ the ASP to the RAN that contains a request for changing the bandwidth associated with the user's access session to the selected bandwidth option in the RAN.

12. (Currently amended) The method of Claim 11, further comprising:
sending a change session bandwidth response message from the RAN to at least one of the NSP and ~~and/or~~ the ASP that contains an acknowledgement for the change session bandwidth request message.

13. (Currently amended) The method of Claim 11, wherein updating the RAN with information further comprises:
updating a rate limit associated with a communication queue in the RAN that is used to process traffic associated with the user's session.

14. (Currently amended) The method of Claim 5, further comprising:
authenticating at least one of the NSP and ~~and/or~~ the ASP with the RAN prior to sending the query from at least one of the NSP and ~~and/or~~ the ASP to the RAN.

15. (Currently amended) The method of Claim 14, wherein authenticating at least one of the NSP and ~~and/or~~ the ASP with the RAN comprises:
sending an establish service session request message from at least one of the NSP and ~~and/or~~ the ASP to the RAN that contains an identification of at least one of the NSP and ~~and/or~~ the ASP and authorization credentials; and
sending an establish service session response message from the RAN to at least one of the NSP and ~~and/or~~ the ASP that contains an authentication result.

16. (Currently amended) The method of Claim 5, wherein sending the query comprises:
sending a query session bandwidth request message from at least one of the NSP and ~~and/or~~ the ASP to the RAN that contains a request for bandwidth information associated with the user's session; and

sending a query session bandwidth response message including scheduling resources from the RAN to the NSP and/or the ASP that contains the bandwidth range.

17. (Currently amended) The method of Claim 1, wherein the request is a first request, the method further comprising:

updating the RAN and the CPE with information to modify at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session; then

receiving a second request at at least one of the NSP and ~~and/or~~ the ASP to delete or change at least one of bandwidth and ~~and/or~~ QoS associated with the user's session; and

using API calls at at least one of the NSP and ~~and/or~~ the ASP to communicate with the RAN to change at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session to a default value in the RAN.

18. (Original) The method of Claim 1, wherein the RAN comprises a Broadband Remote Access Server (BRAS).

19 (Currently amended) A system for modifying at least one of bandwidth and ~~and/or~~ Quality of Service (QoS) for a user session in a network that comprises a Regional/Access Network (RAN) that facilitates differentiated end-to-end data transport between at least one of a Network Service Provider (NSP) and ~~and/or~~ an Application Service Provider (ASP) and a Customer Premises Network (CPN) that includes Customer Premises Equipment (CPE), comprising:

means for receiving a request at and ~~and/or~~ the NSP and ~~and/or~~ the ASP to change at least one of bandwidth and ~~and/or~~ QoS associated with the user's session; and

means for using Application Programming Interface (API) calls at and ~~and/or~~ the NSP and ~~and/or~~ the ASP to communicate with the RAN to modify at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session.

20. (Currently amended) The system of Claim 19, wherein the means for receiving the request comprises:

means for initiating the request at at least one of the NSP and ~~and/or~~ the ASP to change at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session.

21. (Currently amended) The system of Claim 19, wherein the means for receiving the request comprises:

means for receiving the request at at least one of the NSP and ~~and/or~~ the ASP from a user to change at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session.

22. (Original) The system of Claim 21, wherein the QoS associated with the user's session is scheduling resources.

23. (Currently amended) The system of Claim 22, wherein the means for using the API comprises:

means for sending a query from at least one of the NSP and ~~and/or~~ the ASP to the RAN to obtain at least one of a bandwidth range and ~~and/or~~ QoS capabilities from the RAN.

24. (Currently amended) The system of Claim 23, further comprising:
means for presenting to the user via at least one of the ASP and ~~and/or~~ the NSP at least one bandwidth/QoS option within at least one of the bandwidth range and ~~and/or~~ QoS capabilities received from the RAN.

25. (Original) The system of Claim 24, further comprising:
means for obtaining a user selection of one of the at least one bandwidth/QoS option at the NSP and/or the ASP; and
means for updating the RAN with information to provide the selected bandwidth/QoS option for the user's session.

26. (Original) The system of Claim 25, further comprising:
means for updating the CPE with the information to provide the selected bandwidth/QoS option for the user's session.

27. (Currently amended) The system of Claim 26, wherein the means for updating the CPE with information comprises:

means for sending at least one of an update session bandwidth info message and ~~and/or~~ a QoS-related message from the RAN to the CPE that contains a request for changing the bandwidth/QoS associated with the user's session to the selected bandwidth option in the CPE.

28. (Currently amended) The system of Claim 27, wherein the means for updating the RAN with information further comprises:

means for updating at least one of a rate limit and ~~and/or~~ QoS associated with a communication queue in the RAN that is used to process traffic associated with the user's session.

29. (Currently amended) The system of Claim 25, wherein the means for updating the RAN with information comprises:

means for sending a change session bandwidth request message from at least one of the NSP and ~~and/or~~ the ASP to the RAN that contains a request for changing the bandwidth associated with the user's access session to the selected bandwidth option in the RAN.

30. (Currently amended I) The system of Claim 29, further comprising:

means for sending a change session bandwidth response message from the RAN to at least one of the NSP and ~~and/or~~ the ASP that contains an acknowledgement for the change session bandwidth request message.

31. (Original) The system of Claim 29, wherein the means for updating the RAN with information further comprises:

means for updating a rate limit associated with a communication queue in the RAN that is used to process traffic associated with the user's session.

32. (Currently amended) The system of Claim 23, further comprising:

means for authenticating at least one of the NSP and ~~and/or~~ the ASP with the RAN prior to sending the query from at least one of the NSP and ~~and/or~~ the ASP to the RAN.

33. (Currently amended) The system of Claim 32, wherein the means for authenticating at least one of the NSP and ~~and/or~~ the ASP with the RAN comprises:

means for sending an establish service session request message from at least one of the NSP and ~~and/or~~ the ASP to the RAN that contains an identification of at least one of the NSP and ~~and/or~~ the ASP and authorization credentials; and

means for sending an establish service session response message from the RAN to at least one of the NSP and ~~and/or~~ the ASP that contains an authentication result.

34. (Currently amended) The system of Claim 23, wherein the means for sending the query comprises:

means for sending a query session bandwidth request message from at least one of the NSP and ~~and/or~~ the ASP to the RAN that contains a request for bandwidth information associated with the user's session; and

means for sending a query session bandwidth response message including scheduling resources from the RAN to the NSP and/or the ASP that contains the bandwidth range.

35. (Currently amended) The system of Claim 19, wherein the request is a first request, the system further comprising:

means for updating the RAN and the CPE with information to modify at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session;

means for receiving a second request at at least one of the NSP and ~~and/or~~ the ASP to delete or change at least one of bandwidth and ~~and/or~~ QoS associated with the user's session; and

means for using API calls at at least one of the NSP and ~~and/or~~ the ASP to communicate with the RAN to change at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session to a default value in the RAN.

36. (Original) The system of Claim 19, wherein the RAN comprises a Broadband Remote Access Server (BRAS).

37. (Currently amended) A computer program product for modifying at least one of bandwidth and ~~and/or~~ Quality of Service (QoS) for a user session in a network that comprises a Regional/Access Network (RAN) that facilitates differentiated end-to-end data transport between at least one of a Network Service Provider (NSP) and ~~and/or~~ an Application Service Provider (ASP) and a Customer Premises Network (CPN) that includes Customer Premises Equipment (CPE), comprising:

a computer readable storage medium having computer readable program code embodied therein, the computer readable program code comprising:

computer readable program code configured to receive a request at at least one of the NSP and ~~and/or~~ the ASP to change at least one of bandwidth and ~~and/or~~ QoS associated with the user's session; and

computer readable program code configured to use Application Programming Interface (API) calls at at least one of the NSP and ~~and/or~~ the ASP to communicate with the RAN to modify the at least one of bandwidth and ~~and/or~~ QoS associated with the user's session.

38. (Currently amended) The computer program product of Claim 37, wherein the computer readable program code configured to receive the request comprises:

computer readable program code configured to initiate the request at at least one of the NSP and ~~and/or~~ the ASP to change at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session.

39. (Currently amended) The computer program product of Claim 37, wherein the computer readable program code configured to receive the request comprises:

computer readable program code configured to receive the request at at least one of the NSP and ~~and/or~~ the ASP from a user to change at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session.

40. (Original) The computer program product of Claim 39, wherein the QoS associated with the user's session is scheduling resources.

41. (Currently amended) The computer program product of Claim 40, wherein the computer readable program code configured to use the API comprises:

computer readable program code configured to send a query from at least one of the NSP and ~~and/or~~ the ASP to the RAN to obtain at least one of a bandwidth range and ~~and/or~~ QoS capabilities from the RAN.

42. (Currently amended) The computer program product of Claim 41, further comprising:

computer readable program code configured to present to the user via at least one of the ASP and ~~and/or~~ the NSP at least one bandwidth/QoS option within at least one of the bandwidth range and ~~and/or~~ QoS capabilities received from the RAN.

43. (Original) The computer program product of Claim 42, further comprising:
computer readable program code configured to obtain a user selection of one of the at least one bandwidth/QoS option at the NSP and/or the ASP; and

computer readable program code configured to update the RAN with information to provide the selected bandwidth/QoS option for the user's session.

44. (Original) The computer program product of Claim 43, further comprising:
computer readable program code configured to update the CPE with the information to provide the selected bandwidth/QoS option for the user's session.

45. (Currently amended) The computer program product of Claim 44, wherein the computer readable program code configured to update the CPE with information comprises:

computer readable program code configured to send at least one of an update session bandwidth info message and ~~and/or~~ a QoS-related message from the RAN to the CPE that contains a request for changing the bandwidth/QoS associated with the user's session to the selected bandwidth option in the CPE.

46. (Currently amended) The computer program product of Claim 45, wherein the computer readable program code configured to update the RAN with information further comprises:

computer readable program code configured to update at least one of a rate limit and ~~and/or~~ QoS associated with a communication queue in the RAN that is used to process traffic associated with the user's session.

47. (Currently amended) The computer program product of Claim 43, wherein the computer readable program code configured to update the RAN with information comprises:

computer readable program code configured to send a change session bandwidth request message from at least one of the NSP and ~~and/or~~ the ASP to the RAN that contains a request for changing the bandwidth associated with the user's access session to the selected bandwidth option in the RAN.

48. (Currently amended) The computer program product of Claim 47, further comprising:

computer readable program code configured to send a change session bandwidth response message from the RAN to at least one of the NSP and ~~and/or~~ the ASP that contains an acknowledgement for the change session bandwidth request message.

49. (Original) The computer program product of Claim 47, wherein the computer readable program code configured to update the RAN with information further comprises:

computer readable program code configured to update a rate limit associated with a communication queue in the RAN that is used to process traffic associated with the user's session.

50. (Currently amended) The computer program product of Claim 41, further comprising:

computer readable program code configured to authenticate at least one of the NSP and ~~and/or~~ the ASP with the RAN prior to sending the query from at least one of the NSP and ~~and/or~~ the ASP to the RAN.

51. (Currently amended) The computer program product of Claim 50, wherein the computer readable program code configured to authenticate at least one of the NSP and ~~and/or~~ the ASP with the RAN comprises:

computer readable program code configured to send an establish service session request message from at least one of the NSP and ~~and/or~~ the ASP to the RAN that contains an identification of at least one of the NSP and ~~and/or~~ the ASP and authorization credentials; and

computer readable program code configured to send an establish service session response message from the RAN to at least one of the NSP and ~~and/or~~ the ASP that contains an authentication result.

52. (Currently amended) The computer program product of Claim 41, wherein the computer readable program code configured to send the query comprises:

computer readable program code configured to send a query session bandwidth request message from at least one of the NSP and ~~and/or~~ the ASP to the RAN that contains a request for bandwidth information associated with the user's session; and

computer readable program code configured to send a query session bandwidth response message including scheduling resources from the RAN to the NSP and/or the ASP that contains the bandwidth range.

53. (Currently amended) The computer program product of Claim 37, wherein the request is a first request, the computer program product further comprising:

computer readable program code configured to update the RAN and the CPE with information to modify at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session;

computer readable program code configured to receive a second request at at least one of the NSP and ~~and/or~~ the ASP to delete or change at least one of bandwidth and ~~and/or~~ QoS associated with the user's session; and

computer readable program code configured to use API calls at at least one of the NSP and ~~and/or~~ the ASP to communicate with the RAN to change at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session to a default value in the RAN.

54. (Original) The computer program product of Claim 37, wherein the RAN comprises a Broadband Remote Access Server (BRAS).

55. (Currently amended) A method of modifying at least one of bandwidth and ~~and/or~~ Quality of Service (QoS) for a user session in a network that comprises a Regional/Access Network (RAN) that facilitates differentiated end-to-end data transport between at least one of a Network Service Provider (NSP) and ~~and/or~~ an Application Service Provider (ASP) and a Customer Premises Network (CPN) that includes Customer Premises Equipment (CPE), comprising:

receiving a request at at least one of the NSP and ~~and/or~~ the ASP to change at least one of bandwidth and ~~and/or~~ QoS associated with the user's session; and

using messaging interface calls at at least one of the NSP and ~~and/or~~ the ASP to communicate with the RAN to modify at least one of the bandwidth and ~~and/or~~ QoS associated with the user's session.